

UTILITY AND STATE INDUSTRIAL EMS  
INCENTIVES PROGRAMS: EXPERIENCE  
AND SUCCESS FACTORS

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**UTILITY AND STATE INDUSTRIAL EMS INCENTIVES PROGRAMS:  
Experience and Success Factors**

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**ABSTRACT**

This paper summarizes the results of a survey of utility and state demand-side management (DSM) programs that address efficient motor systems. The paper discusses the incentive structures in place at both the state and utility levels to encourage efficient motor systems, and the market barriers associated with implementation of efficient motor equipment. The paper also assesses how the current incentives might address the market barriers to the implementation of efficient motor systems.

**INTRODUCTION**

Much has been done to improve the efficiency of motor systems over the past decade. Public utility commissions, by requiring utilities to undertake integrated resource planning, have spawned more efficient motor systems through demand-side management programs. Some states have also encouraged efficient motor systems through building code standards. Some states have also been active in promoting efficient motor systems without formal programs. More recently the Energy Policy Act of 1992 establishes motor efficiency standards that will become increasingly important in changing the efficiency of industrial motors systems in industry.

This paper summarizes the results of a survey of utilities with industrial demand side management (DSM) programs that address efficient motors and/or motor controllers. In addition, state energy offices were contacted to determine whether they sponsored efficient motor programs independent of utility programs. The paper also reviews how these programs are addressing barriers to the implementation of efficient motor systems in industry.<sup>1</sup> In all, information was collected on 25 programs within

21 utilities and various programs within the 50 states.

The topic is introduced by describing utility programs, providing an overview of state programs and showing the link between this and the other papers in this workshop. The second section indicates the states that provide financial incentives, efficient motor standards, and other state laws and regulations. The third section describes utility programs currently in place, while the fourth section discusses other program types, such as how utility commissions provide utilities with incentives to undertake DSM programs, and identifies technical assistance and information programs currently in effect. A fifth section raises some of the more important issues that need to be considered in structuring a successful EMS program, and the sixth section identifies some successful programs through brief case studies. The final section concludes the paper with a list of people contacted, the questions asked, and the responses given.

**Description of Utility DSM Programs**

Most utility DSM programs do not specifically target industrial customers; instead, industrial customers are combined with commercial, and in two programs surveyed, agricultural customers. Fifteen programs provide incentives for both motors and motor controllers, usually referred to as adjustable speed drives (ASDs); seven programs target only motors; and three programs are aimed at ASDs. Most programs provide an incentive for both new and replacement installations, however, three programs limit the incentives to replacement installations.

Marketing methods varied by utility, with most utilities relying on more than one type of

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<sup>1</sup> Additional information about state programs was provided by the reports, "Electrical Motor and Drive National Inventory," by the U.S. Department of Energy and "Incentives for Demands-Side Management," by Reid and Brown.

method. Eighteen programs utilize personal contacts, primarily in the form of customer or field representatives. Sixteen programs include marketing through vendors, ten programs use letters or other forms of mailing to the customer, seven programs advertise in trade journals or through other media, and ten programs incorporate other marketing methods such as seminars.

Only seven programs include a vendor incentive, although four others are considering this option. The most popular customer incentive is a direct rebate, usually based on a per horsepower (hp) basis, although some rebates are per motor or drive. Other customer incentives include low-interest loans and payments for demand reduction.

#### Characterization of State Programs

Twenty-five states were contacted by Pacific Northwest Laboratory (PNL) to determine what state-sponsored programs were in effect to encourage the use of efficient motors and adjustable speed drives. Four states did not contribute information. Additional information is available from PNL on request.

Five states reported that they participate in the Institutional Conservation Program which addresses energy consumption in schools, hospitals, and government facilities. Efficient motors and ASDs would be eligible for funding under these programs. While most states contacted do have some conservation programs in effect, no state sponsored a program specifically aimed at efficient motors. With funding from the U.S. Department of Energy and Bonneville Power Administration, personnel at the Washington State Energy Office developed the MotorMaster program which is currently used by several states to identify appropriate high efficiency motors for particular applications.

Individuals in five state energy offices indicated their states were either considering programs specifically stressing efficient motors or including motors with other conservation options such as efficient lighting. Eighteen states do provide some form of financial incentive for the installation of efficiency measures. Low-interest or regular loans were the most common type of incentive.

In general, information obtained from the state energy offices indicated that while individual states might be concerned specifically with the conservation potential of high efficiency motors and adjustable speed drives, interested customers would be advised to approach their local utilities to determine what incentive programs were available. Several state representatives indicated that while their state was interested in pursuing an efficient motor program, there were simply not enough funds available to support a program.

#### Common Market Barriers

There are many barriers that inhibit the implementation of efficient motor systems within industry. Some of the more common barriers on the customer's side include:

- **higher initial cost:** efficient motor technologies tend to cost more than standard motors and other technologies such as motor rewinds;
- **cost of information:** many customers do not have the time or funds available to research newer technologies and determine whether or not those technologies are appropriate for the industry, and if so, how they might be incorporated;
- **possible time constraints:** in most cases, motors are replaced on failure, when it is believed that the motor can no longer be rewound. When a motor does fail, it is often important to get a replacement as quickly as possible so that production does not suffer. If efficient technologies are not immediately available, if the customer must deal with cumbersome rebate policies, or if the implementation time frame does not coincide with the customer's procurement time frame, the customer may be less inclined to purchase efficient technologies.

On the utility side, one barrier to the instigation of DSM programs is the concern about cost recovery and profit. Financial incentives that address the concerns of the utility can help with the number and type of DSM programs offered.

#### **STATE PROGRAMS**

This section presents information about state programs and how they address some of the more common market barriers. The first part discusses the structure of financial incentives in states which offer such programs. The second part examines

state energy codes and building standards to determine which states have efficiency standards or requirements for motors; and the third part addresses other state laws and regulations which address efficient motors systems.

#### **State-Sponsored EMS Financial Investment Programs**

Eighteen states provide some form of financial assistance for the installation of energy efficient motors and drives. Depending on the type, financial assistance can help to reduce or eliminate the difference in cost between standard and efficient technologies. Financial assistance can occur as a tax credit, a low-interest loan, a general loan program, rebates, or grants. Only two states currently offer a tax credit for investment in energy efficient measures, ID and OR. Six states offer low-interest loans for efficient motors and drives: ID, NY, NC, OR, RI and TN. Twelve states offer other forms of financial incentives, including regular loans, grants, and rebates. These states are AZ, AK, CT, LA, MA, MO, NB, ND, OK, SD, TX and UT.

#### **Energy Efficient Motor Efficiency Standards**

Seven states plus the District of Columbia are known to have energy codes or building standards that address efficient motors and drives systems. Two additional states have cities or counties which are addressing motor efficiencies at the local level. Through the implementation of motor standards, some of the barriers to voluntary installation of efficient motor systems are eliminated. The concerns that raised those barriers initially are still in place, however. In the absence of other programs designed to address those concerns, it is possible that building standards requiring greater efficiency will be met with more resistance than if the firms affected were informed as to the benefits of EMS. These and all other incentives are summarized in Table 1.

#### **State Laws and Regulations Pertaining to EMS**

Only two states are known to have passed legislation or regulations pertaining to efficient motors and drives. Laws and regulations, like standards, mandate efficiency levels, and consequently eliminate some of the barriers associated with voluntary implementation of efficient motor technologies. In 1990, the State of Iowa passed legislation requiring utility DSM. Life-cycle costing for motors will be used by the

State of Vermont in reviewing land-use applications for commercial and industrial development proposals in accordance with a regulatory act, Act 250.

#### **UTILITY INDUSTRIAL DSM PROGRAMS**

There are many factors which contribute to the success of a DSM program. The common focus between these factors is that they address one or more barriers that the customer has raised toward the installation of EMS. All utilities surveyed rely on some form of customer incentive to encourage the purchase of efficient motors and drives, and some also employ vendor incentives as well. The various utility incentive programs are discussed more thoroughly in this section.

#### **Customer Incentives**

All utility DSM programs identified provide some type of incentive to the customer to encourage the selection of efficient motors and/or the installation of motor controllers. As with the financial incentives offered by some states, the utility customer incentive helps to reduce the difference in price between standard efficiency motors and higher efficiency motors. This section discusses the types of incentives offered and presents examples of programs which have changed or plan to change the incentive portion of their program.

#### **Structure of Programs**

Customer incentives offered by the utilities are as varied as the programs themselves. In all, 22 programs offer rebates for motors and ASDs. Two programs offer payments based on energy reduction or as a percentage of the cost of the efficiency measure, and one program offers grants for efficiency projects. Of the programs that use rebates, five also have other incentives available. Two programs offer low-interest loans, three programs offer payments, and one program offers a cash incentive for customers who identify motors that they will replace in the future with energy efficient motors.

Rebates for motors range from \$3 per hp to \$20 per hp in programs which base their rebates on horsepower, and from \$30 to \$3,200 per motor depending on motor size. In all, fifteen out of 22 programs offering motor rebates have a fixed, easy to calculate, rebate level. The other seven programs either base incentives on project payback, usually calculated for one or two years,

make payments based on project cost, or customize the rebate. Customized rebates are also offered in conjunction with some of the fixed rebate programs for the larger sized motors, usually greater than 200 horsepower.

Rebates for ASDs are just as varied. Most are offered on a per horsepower basis, ranging from \$20 to \$140 per horsepower. Others are customized, depend on purchase cost, or depend on expected energy savings.

Out of the 25 programs, four have increased their incentive level, or plan to increase it; four have reduced or plan to reduce their incentive level; two programs have made modifications involving increases and reductions for individual sizes; and one program is considering a change in their incentive level. Reasons for the changes include the results of cost-effectiveness studies, feedback from vendors and customers, and program success. For example, B.C. Hydro is planning to reduce customer incentives for its motors program due to surveys which indicate that efficient motors compose 80% of motor sales, while another utility is considering an incentive increase because information from vendors and potential customers has indicated that the current level does not stimulate enough interest in the program.

#### Verification of Savings

Less than half of the programs surveyed have completed an evaluation, and of those that have, most relied on customer surveys and engineering estimates in order to perform process and impact evaluations. Some programs do use monitoring or end-use metering, while others may rely on metering by the customer or billing analysis.

Five evaluation reports were obtained to provide more detailed information about the evaluation processes. Four of the five studies estimated the free-rider participation, and then adjusted the savings levels to determine the amount of savings attributable to the program. The level of savings, in most cases, is determined by engineering estimates and calculations. One study used actual customer load and equipment data, determined from a survey, while the others tended to rely more on assumptions about the average load.

While it may be more expensive or time-consuming to perform metering or re-audits, it

can be much more informative. For example, when B.C. Hydro re-audited customers who had installed ASDs under their Power Smart Efficient Fans program, they found that 20% of the firms had failed to use the ASDs as intended, primarily due to changed schedules or new operators. The program is now working on better educating those firms so that their equipment is more fully utilized.

#### Other Factors that Affect Choice

One problem with performing extensive audits both before and after an installation is that it can delay the installation of a measure. Large expenditures may need to be approved by the plant, making replacement of failed equipment more difficult since most plants can't afford to wait. Concerns such as these can raise barriers to implementation of EMS as many firms may operate under time constraints. Utilities which encourage planning ahead and that attempt to work their program time line coincide with their customers can help to alleviate part of the time constraint barrier.

One of the changes Minnesota Power made was to increase the application and installation period to 24 months because customers were having difficulties in making the project time frame coincide with their capital expenditure planning process. The program is geared toward large industrial customers who are planning major efficiency improvements, so two years is most likely not a problem. For customers who are looking for immediate replacement or who have not considered efficient motors, a lengthy processing period can be detrimental.

Successfully marketing the DSM program can also help in reducing the time constraint barriers, as knowledge of a program may encourage advanced planning on the part of the customer. One would expect that as barriers are addressed, participation rates would rise. While no programs suggested changes in their marketing techniques, the way in which a program is marketed can have direct effects on the successfulness of that program. For example, due to budget cutbacks, one utility currently must rely on word of mouth advertising by vendors. Because this limits the awareness of the program, the participation rate is affected. Bonneville Power Administration (BPA) has found that face-to-face contacts are the most effective, and 18 out of 25 programs utilize some

form of personal contact, usually through the use of company representatives.

BPA also believes that it is very important to get to know the customer and the customer's facility. This knowledge can be applied toward program changes, as Minnesota Power has discovered. The main focus of Minnesota Power's customers is not on energy conservation, so the utility has added provisions for productivity and efficiency projects to their program. Targeting the program toward the customer's concerns can increase participation.

Marketing the program from different angles may also increase participation. Commonwealth Edison in Illinois distributes brochures which approach the benefits of program participation in a variety of ways. Approaches include environmental benefits and the potential savings involved.

Three programs raised concerns about efficiency level requirements during the survey. Most programs rely on efficiency guidelines set by the National Electrical Manufacturers Association (NEMA), although some use other efficiency levels, such as those developed by the Washington State Energy Office (WSEO) and BPA. Two programs are considering raising their current efficiency requirements to make qualification for the program more difficult, while one is considering a decrease because so many applicants are turned down. In the case where efficiency requirement levels are viewed as being too high, barriers to installation of EMS may be introduced. If customers attempt to participate but find that their selected motors don't qualify, they may opt to purchase standard efficiency motors due to the cost associated with higher efficiency motors.

#### Vendor Incentives

Vendor incentives are provided for a variety of reasons. Incentives can be considered a payment for services rendered, as the vendor can help the customer select the proper motor and take care of the paper work associated with the rebate application; or to encourage the vendor to stock the more efficient equipment that he/she might not otherwise carry. Other programs consider the incentive as a means to increase participation rates, assuming that incentives will encourage vendors to be more thorough or

aggressive in marketing the motors that qualify for rebates.

Vendor incentives may also address some of the barriers to customers. If a customer needs a motor immediately and the vendor has been encouraged to stock efficient motors in that size, then the customer may be more likely to buy the efficient motor, assuming he/she knows about the customer incentive, since it is immediately available. Vendors can also eliminate some of the hassle of paperwork and processing for rebates so that the customer is not discouraged by the amount of paperwork needed to receive the incentive.

Currently, there are seven programs that offer vendor incentives, however, one is being phased out at the end of 1992, and another will be reducing the incentive amount. Incentive levels usually are based on horsepower, although one program pays on a per motor basis while another is based on Kw saved. The incentive amount ranges from \$1 to \$3 per horsepower for motors and from \$1 to \$5 per hp for ASDs. Programs offering incentives greater than \$1 per hp place limits on the total rebate amount.

New York State Electric and Gas (NYSEG) does not have a specific motors program, but does provide motor rebates as a part of each of three programs that they run. NYSEG has been offering a vendor incentive equivalent to approximately 10% of the customer incentive, which equates to \$2 per hp for motors and from \$14 per hp for smaller ASDs to \$7 per hp for the larger ASDs. Originally, the incentive was designed as an award to vendors for stocking energy efficient motors. Vendors have seen the merits of this practice, and have changed their stocking habits. Both the utility and their trade allies, which include vendors and distributors, believe that the incentive is no longer necessary. NYSEG also participates in cooperative advertising with vendors, and provides up to half of the advertising costs, up to a set limit. This aspect of the utility-vendor relationship is expected to continue.

B.C. Hydro offers many efficiency programs as a part of their Power Smart program. Suggested changes for their High-Efficiency Motors program include reduction of rebate amounts for both customers and vendors, as

vendors receive a percentage of the customer rebate level. Currently vendors receive 20%, usually \$75 per kW saved, so the more efficient the motor, the higher the rebate. If the customer is trading in a motor, both the customer and the vendor are eligible to receive an extra 50% of the rebate level. The utility has determined that the market has reached a stage where a reduction in incentive level would not be detrimental. Efficient motors are a four-to-one seller over standard motors, and the utility has determined that efficient motors have an 80% market share.

There are also four programs which are looking into the addition of vendor incentives. For example, when New England Electric System's Design 2000 program was originally designed, it did not include a vendor incentive because vendors claimed that they did not need one; however the program is now considering the addition of an incentive to try to increase market penetration.

#### Trade Allies

One of the points made in B.C. Hydro's evaluation of their motors program was the recognition of the importance of trade allies. Trade allies include vendors, distributors, and manufacturers, and almost all of the programs involve trade allies to some extent. The degree of involvement varies from informing vendors about the program and providing them with rebate forms, to sharing advertising costs and involving vendors in seminars and workshops. Some programs also work with the manufacturers, holding annual meetings, coordinating program expectations with available motors, or tracking industry developments.

#### **OTHER PROGRAMS**

DSM programs are not limited to those which address the industrial customer. Many states, through their utility commissions, offer incentives to the utilities to encourage the formation of DSM programs. State and utility programs also often offer educational or technical assistance involving efficient motors, and also provide information about efficient motors or motors programs.

#### Public Utility Commission Regulatory Incentives

Through the establishment of regulatory incentives, Public Utility Commissions (PUCs) can help to encourage the formation of DSM

programs. Incentives are necessary in many cases because utilities are used to associating profit with electricity sales. Since DSM programs encourage conservation efforts, and provide funding for such efforts, they tend to be viewed by utilities as a loss in revenue. By initiating mechanisms that allow a utility to recover their costs, PUCs promote DSM programs.

According to the report, "Incentives for Demand-Side Management," all but 19 states had addressed or had begun to address the financial barriers inhibiting the establishment of utility DSM programs by October 1991. Three of the nineteen states that had not yet taken formal action do allow some form of DSM cost recovery, however. Of the 24 states that had regulatory incentives in place, only four are not known to have utility DSM programs in place or in progress.

Regulatory incentives can take many forms. Most common are cost recovery programs, where the utility is allowed to recover the cost of offering the DSM programs. Cost recovery can take the form of balancing accounts or through rate basing. Also common are regulations allowing lost revenue recovery through a DSM-specific adjustment or other mechanism. Some PUC's also allow shareholder incentives.

#### Education and Technical Assistance Programs

This section discusses the educational and technical assistance provided by utility and state programs. Assistance programs such as these help the customer by providing information and technical expertise at little or no cost to the customer. The customer is spared the time and expense of searching for the information and, in some cases, the cost to evaluate the most appropriate technologies. In doing so, the provision of such programs help to reduce the market barriers related to information costs. Most utility programs target different groups, such as their customers and vendors, while state programs do not draw on a specific customer base.

#### Utility Programs

While the financial incentive attempts to interest a customer in the program, it may not be enough if the customer is unfamiliar, and therefore apprehensive, about the installation of new technologies. To address this concern,

educational materials are often presented explaining the benefits of efficient motor systems. Only two of the utility programs surveyed do not offer any educational materials.

Once a customer is interested in the program, all but one program surveyed will offer the customer technical assistance in some form. Technical assistance can range from the provision of software and worksheets to help calculate potential energy savings to extensive energy audits and recommendations for efficient measures. By providing educational and technical assistance, the utility reduces barriers associated with the cost of information to the customer.

While almost all utility programs offer educational and technical assistance to the customer, the degree of the assistance varies. Educational assistance is provided through brochures and pamphlets, seminars and workshops, and software packages. Technical assistance ranges from the assistance in the calculation of savings estimates to retaining consultants to full scale energy audits, provided free of charge.

Northern States Power Company - Wisconsin sponsors sessions with motor and ASD manufacturers who present seminars to interested customers. The utility, in conjunction with other Wisconsin utilities, also holds an energy conference every other year which provides information from vendor booths and includes technical sessions about the latest technologies and how they are applicable to the commercial and industrial sectors.

Almost half of the programs provide educational materials to vendors, either to help them in marketing the program to smaller customers or to try to convince them to stock efficient motors. Eleven programs offer marketing assistance to vendors, ranging from brochures and display materials to cooperative advertising and cost-sharing for mailings. Assistance to trade allies, other than vendors or distributors, is primarily limited to an exchange of information. While some utilities use mass media approaches to advertise their motors programs, most do not extend their educational or technical assistance programs to the general public.

### State Programs

Six of the states contacted by PNL mentioned that their state energy office either conducts or subsidizes technology assessments or energy audits through which customers are advised of the potential for high efficiency motors. At this point though, the customer must appeal to the utilities for programs offering incentives for efficient motors. Some states indicated they also conduct workshops on various aspects of energy consumption and, where appropriate, high efficiency motors and ASDs are discussed and encouraged. Again, these states are identified in Table 1.

### Information Programs

The following states provide information to interested parties. Seminars which include a session on efficient motors are conducted by the Arizona Energy Office. Information about motors and drives is provided on request by the Colorado Office of Energy Conservation. The Idaho Department of Water Resources, Energy Division provides information and technology transfer by request. North Carolina State University currently holds a contract to run the North Carolina Energy Management Technology and Technical Assistance Project. The project includes workshops in areas including motors and drives and provides technical assistance. The Oregon Department of Energy provides technology transfer and information as requested. Information on energy efficient motors and drives is provided to manufacturers and industries through the Pennsylvania Energy Office regional Energy Centers. The Washington State Energy Office provides technology transfer and efficiency information. WSEO also developed and maintains the MotorMaster energy-efficient motor database, which is distributed nationally. The Wisconsin Energy Bureau will provide information about energy efficient motors when it is requested.

### **OTHER ISSUES**

There are other issues that should be addressed although their impact on the success of a program may not be as obvious. They include motor rewinds, what to do with replaced motors, and free-riders.

### Motor Rewinds

None of the programs surveyed address motor rewinds or rewind practices directly,

although four are conducting research. BPA currently distributes some educational material on rewinds within their Energy-Efficient Electric Motor Selection Handbook, as part of their electric motors kit. Ontario Hydro is in the process of working with the Electric Apparatus Service Association to develop a quality assurance program for rewinds. They have conducted two studies; one examining standard motor rewinds, and the other examining multiple rewinds of a single motor. They are also examining a study conducted by B.C. Hydro regarding high efficiency motor rewinds. B.C. Hydro is also working to establish rewind quality assurance. New England Electric System is in the process of developing educational materials to improve rewind practices, and United Illuminating in Connecticut has hired a consultant to examine motor rewinds and may adjust their incentives for rewindable motors.

#### **Replacement Motors**

The issue of the replaced motor is a concern, although only five programs address it. Three require that the motor be destroyed or rendered inoperable. One allows for motors to be traded in, and the trade-ins are destroyed, and one program asks customers what they did with their old motors, but the information has not yet been analyzed. One concern raised was that of enforcement, as it is difficult for the utility to ensure that actual motor destruction takes place. For example, some programs originally required the removal of the old motor name plate, however the practice was discontinued because it did not prevent the use of the old motors.

Of the programs that do not have requirements placed on replaced motors, ten said that they did not track the information, four said that they hoped the motors were destroyed, one thought they might be recycled, and one thought that they might be rewound for emergency use, although none of the respondents knew exactly what happened. One utility knew of at least one replaced motor that had been refurbished and resold.

#### **Free-Riders**

Four programs have calculated the free-ridership associated with their programs. Central Maine Power (CMP) estimated through surveys that free riders accounted for 55% of the rebates. CMP questions this high rate, however, indicating

that a single survey data source may not accurately reflect free-rider participation (2).

New England Electric System (NEES) Design 2000 program calculated a 50% free-ridership for motors, based on interviews covering key areas such as whether or not the measure would have been specified without the incentive, how important the incentives were in comparison with other considerations, the stage at which the customer entered the program, changes made to original plans and specifications, if the customer specified similar measures in other service areas, and if the other service areas had any type of incentive program. The Design 2000 program evaluation predicts that free-ridership over time will decrease since the initial participants are likely to be the most energy conscious (3).

For the NEES Energy Initiative program, free-ridership was calculated to be 22% for motors. This estimation was derived using several different methods. Participants were asked what actions they would have taken without the program, and then were asked if they would have spent the same amount of money, including the incentive amount, to install a measure within the same time frame. Estimates for both methods were similar, however, NEES considered the second method to be more accurate since it involved the willingness to commit funds (3).

Niagara Mohawk Power Corporation calculated an initial free-rider rate of 40% for their motors and drives program through a survey, and then reevaluated the respondents indicating free-ridership using payback analysis. Using the second method, the free-rider participation rate was estimated at 23%. The rate decline is attributed to those respondents who claimed that they would have purchased an efficient motor without the rebate, but in actuality would not have because their company had set payback policies that the efficient motor or ASD would not have met (1).

The CMP evaluation recommends that the utility should continue to monitor the free-rider rate. They expect the rate to increase over time as a customer is likely to apply for rebates on future purchases. The recommendation is also made, therefore, to limit the total cumulative rebate available to a given customer (2). However, Northern States Power Co. - Wisconsin

(NSPC - Wisconsin) expressed a different situation. NSPC - Wisconsin's customers have been happy with the efficiency improvements and have begun to implement measures on their own, without applying for the available rebates. Part of their success may be attributable to the education of the customer in that customers can learn how to apply efficient technologies to their own processes.

## CONCLUSIONS

While some states and utilities have developed programs to address the installation of efficient motors, states and utilities as a whole have a long way to go. Table 1 summarizes much of the program information presented in this paper on a state-by-state basis. The table indicates which states, including the District of Columbia, have utility-sponsored commercial and industrial (C & I) DSM programs, state-supported financial incentives, motor standards, laws or regulations, and PUC regulatory incentives.

Many state PUCs have removed, or are in the process of removing, the financial barriers to utilities that enact DSM programs. 31 states currently have utilities offering DSM programs, and two additional state PUCs are reviewing utility proposals for DSM programs. Of these 31 states, only four of the state PUCs do not have some form of cost-recovery mechanism in place, although two state PUCs are in the process of establishing regulatory incentives. And of the 27 state PUCs that have cost-recovery mechanisms in place, only four do not have utilities offering DSM programs. Most states do not have motor efficiency standards or laws and regulations covering efficient motors systems. Only seven states do not address efficient motors in any manner.

In general, state programs addressing efficient motors are limited to the provision of information and technical assistance. Some states also provide funding for projects involving efficient motors and ASDs. Most utility programs are targeted at commercial and industrial customers and include incentives for both motors and ASDs. Utility programs usually provide educational and technical assistance to their customers and rely most often on rebates as the customer incentive. Less than half of the utilities surveyed currently offer a vendor incentive or are considering adding one to their program. Most utilities have not

addressed motor rewind issues or what to do with replaced motors.

Many programs addressing efficient motors are currently underway. While many states and utilities have begun to address efficient motor systems, little has been done to determine whether or not the programs are actually cost-effective. The trial and error method of refining programs could be expedited through the transfer of information and sharing of experiences. The encouragement of efficient motors systems should continue, however, the emphasis should be placed on implementing programs that are cost-effective and address the needs and concerns of all parties involved.

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Table 1. National Overview of Programs - Status

STATE	UTILITY C & I DSM PROGRAMS	STATE-SUPPORTED FINANCIAL INCENTIVES	MOTOR STANDARDS	STATE LAWS AND REGULATIONS	PUC REGULATORY INCENTIVES
AL, AK, DE, KY, MS, SC, WV, WY					
AR, LA	Yes	Funding available			
Arizona		Loans			Yes
CA, CO, IN, MD, MI, MT, NJ	Yes				Yes
Connecticut	Yes	Grants	Yes		Yes
DC, MA	Yes		Yes		Yes
Florida	Yes		Have not yet gone into effect		In Progress
Georgia	Proposing		Yes: upgrading		In Progress
Hawaii			Yes: Counties		In Progress
Idaho, Oregon	Yes	Tax credits, Low-interest loans			Yes
Illinois	Yes				No formal action
Iowa	Yes			Yes	Yes
KS, NH, OH					Yes
Maine	Yes	Grants			Yes
Minnesota	Yes		Proposed		Yes
Missouri		Loans under dev.			
Nebraska, Utah		Loans			
Nevada	Yes				In Progress
NM, VA					In Progress
New York	Yes	Interest subsidies	Yes		Yes
North Carolina	Yes	Low-interest loans			In Progress
North Dakota	Yes	Grants, Rebates			
Oklahoma	Yes	Funding available			No formal action
Pennsylvania	Proposing				In Progress
Rhode Island	Yes	Low-interest loans			Yes
South Dakota	Yes	Loans			
Tennessee	Yes	5% interest loans			
Texas	Yes	Funding available			Yes
Vermont	Yes		Yes	Yes	Yes
Washington	Yes		Some cities		Yes
Wisconsin	Yes				No formal action

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